

WHAT IS CLAIMED IS:

1. A screw, comprising:
  - a shank;
  - a head at one end of the shank and a tip at the other end of the shank, the shank having an outer surface,
  - 5 the shank being of substantially constant maximum radius between the head and the tip;
  - a drill section formed on the shank and extending from the tip to an intermediate position between the tip and the head, the drill section having at least one flute
  - 10 defining a bore cutting edge at the tip of the shank which extends from a radially inner position with respect to said shank to the outer surface of the shank;
  - a screw thread formed on the outer surface between the head and the tip and terminating at the bore
  - 15 cutting edge; and
  - the flute further forming a flute edge which intersects the screw thread between the tip and the intermediate position to form at least one thread tapping surface on the screw thread where the flute edge intersects
  - 20 the thread, so that when the screw is screwed into a work piece, the bore cutting edge drills a bore having a diameter substantially equal to the cross-sectional size of the shank, and the thread tapping surface cuts into the work piece to tap the bore and engage the screw thread with
  - 25 the work piece.
2. The screw of claim 1 wherein the screw thread extends from the bore cutting edge to a second intermediate position between the tip and the head, and wherein the first intermediate position is between the tip and the
- 5 second intermediate position.
3. The screw of claim 1 wherein the head is formed from a hexagonal profile and a flange, the hexagonal profile being for engagement by a tool to rotate the screw

to drive the screw into the work piece.

4. The screw of claim 1 wherein the cutting edge forms a plurality of thread tapping surfaces on the thread.

5. The screw of claim 1 wherein the drill section is provided with two flutes which form two bore cutting edges and two sets of thread tapping surfaces where the flute edges intersect the thread between the tip and the intermediate position.

5. The screw of claim 1 wherein the tip is defined by a generally conical surface which has an apex, and the bore cutting edge extend from the apex to the outer surface of the shank, and at least one of the thread tapping surfaces having a thread tapping edge which is a continuation of the bore cutting edge but formed at a different angle to the bore cutting edge.

7. The screw of claim 6 wherein the conical surface is formed as a clearance surface which falls away from the bore cutting edge so the clearance surface does not make contact with the work piece when a bore is being drilled.

5. The screw according to claim 1 wherein the tip is provided with a clearance surface which falls away from the bore cutting edge so the clearance surface does not make contact with the work piece as a bore is being cut into the work piece by the bore cutting edge.

9. The screw according to claim 1 wherein the tip has a clearance surface which forms a cone angle of about  $110^\circ$  at the cutting edge and reduces gradually to a cone angle of about  $83.5^\circ$  at a trailing edge of the flute.

10. A self tapping screw comprising:  
a head;

a tip;  
a shank having an outer surface;  
5 a screw thread projecting outward from the outer surface of the shank and extending from a start location between the head and the tip to the tip, the shank having a constant maximum radius at least from the start location to the tip;  
10 a drill section generally at the tip of the screw, the drill section being defined by at least one flute formed in the tip and the shank, the flute defining a cutting edge on the tip for forming a bore having a diameter equal to the diameter of the shank from the start  
15 location to the tip;  
the flute further defining a thread tapping edge at the intersection of the flute with the thread at a position nearest to the tip.

11. The screw of claim 10 wherein the tip is defined by a generally conical surface which has an apex, and the bore cutting edge extends from the apex to the outer surface of the shank, and wherein the thread tapping edge  
5 comprises a continuation of the bore cutting edge but formed at a different angle to the bore cutting edge.

12. The screw of claim 11 wherein the conical surface is formed as a clearance surface which falls away from the bore cutting edge so the clearance surface does not make contact with the work piece when a bore is being drilled.

13. The screw according to claim 10 wherein the tip is provided with a clearance surface which falls away from the bore cutting edge so the clearance surface does not make contact with the work piece as a bore is being cut  
5 into the work piece by the bore cutting edge.

14. The screw according to claim 13 wherein the clearance surface has an angle with respect to a line

perpendicular to the axis of the shank which is greater than the angle of the thread with respect to that  
5 perpendicular line.

15. The screw according to claim 10 wherein the tip has a clearance surface which forms a cone angle of about  $110^\circ$  at the cutting edge and reduces gradually to a cone angle of about  $83.5^\circ$  at a trailing edge of the flute.